WIND RIVER

FIRST® Robotics Competition 2014

Installation Instructions

Wind River® Workbench and VxWorks®

National Instruments® FRC® 2014 Tools and CompactRIO® Drivers

2.0

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FIRST Robotics Competition 2014 README FIRST.pdf 2.0
11 October 2011

Contents

Chapter 1 Overview

Chapter 2 Installing Wind River Workbench 3.0.1 and VxWorks 6.3

Chapter 3 Installing Wind River Workbench 3.3.1 (essential instructions)

Chapter 4 Mandatory Software Updates from FIRST

Chapter 5 Wind River Documentation Notes for FIRST Robotics Competition 2014

Chapter 1: Overview

To program your robot in C and C++, use Wind River Workbench (development environment) and the VxWorks operating system, along with FRC-specific tools and CompactRIO drivers from National Instruments.

You must install software from both Wind River and National Instruments. After finishing your Wind River and National Instruments software installations, all teams must install mandatory software updates from the FIRST Web site.

At the FIRST Web site, you will also find FIRST documentation on how to set up CompactRIO and get started.

After starting Wind River Workbench, you can navigate through the Workbench environment to find Wind River documentation. The easiest way to find documents in Wind River Workbench is to select the **Help > Help Contents** menu item. This starts the help system in a browser, and provides search capability across all installed documents. We recommend doing the tutorial in the *Wind River Workbench Users Guide*.

Discs Provided

For 2014, Wind River is providing two DVDs. Disc 1 must be installed first and has everything you need for a 32-bit host operating system. If your host operating system is Windows **8**, Windows **7** or Windows **XP 64-bit**, you must also install Disc 2.

NOTE: Disc 1 must be installed before Disc 2.

NOTE: If you are installing on Windows 8.
On Windows 8 we have noticed that there are times when the installation will appear to hang. If your installation gets stuck, i.e. the progress bar does not move for more than 5 minutes, try the following:

1) **Fire up the Windows Task Manager: Push simultaneously: "Ctrl, Shift and Escape"**
2) **Sort by "Image Name"**
3) **Find processes called "sh.exe" and "uitclsh.exe"**
4) **Kill these processes by right-clicking on them, and executing the "End Process" menu item**
5) **The installation should be unstuck and continue where it left off**

Disc 1 (Install first)
DVD-R138732.1-1-05
Wind River Workbench 3.0.1 with VxWorks 6.3
FIRST Robotics Competition 2014 - Disc 1
Windows 7/XP/Vista 32-bit Host Support

CAUTION: Do not launch Wind River Workbench 3.0 before installing or launching Wind River Workbench 3.3. If you do, you will see an error message when you start Workbench 3.3. Go to Chapter 3 for instructions on fixing this error.

If you need to install Disc 2, then on the final screen of the installer for Disc 1, be sure to uncheck both boxes so that Workbench 3.0 will not be launched automatically. Then, click **Finish** and install Disc 2.

Disc 2 (Install second; for Windows 8, Windows 7 and 64-bit XP hosts only)
DVD-R171811.1-1-02
Wind River Workbench 3.3.1
FIRST Robotics Competition 2014 - Disc 2

Chapter 2: Installing Wind River Workbench and VxWorks

2.1 Uninstall Older FRC Software

Before uninstalling, you may want to move any application programs you previously coded into an archive directory to use as reference. Also, save your existing Wind River Workbench workspace directories by changing the subdirectory name. For example, you might change the directory **WindRiver\workspace** to **WindRiver\workspace_FRC2011_old**.

Then use the uninstallation tools provided with your Wind River and National Instruments software installations. Finally, delete any remaining directories and subdirectories from the installation directory (*installDir*, or **WindRiver** in the example above).

2.2 Uninstalling Wind River Software

Step 1: Select **Start > All Programs > Wind River > Uninstall and Maintenance > Maintenance Tool > Uninstall**.

Step 2: Select **Uninstall** and click **Uninstall** on the next screen as well.

Step 3: Click **Finish**.

Step 4: Delete any remaining Wind River directories as needed, except for the **workspace** directories you saved previously.

2.3 Installation and Activation Instructions

The following pages have screenshots of the Wind River installer and instructions at the top or bottom of each page. Please note that while these screenshots were obtained for the 2011 FRC, they still apply for the 2014 FRC with some minor filename changes. Special instructions are provided for reinstalling Workbench and VxWorks and for updating your licensing for the 2014 FRC. An Internet connection is not required for installing and activating Wind River software.

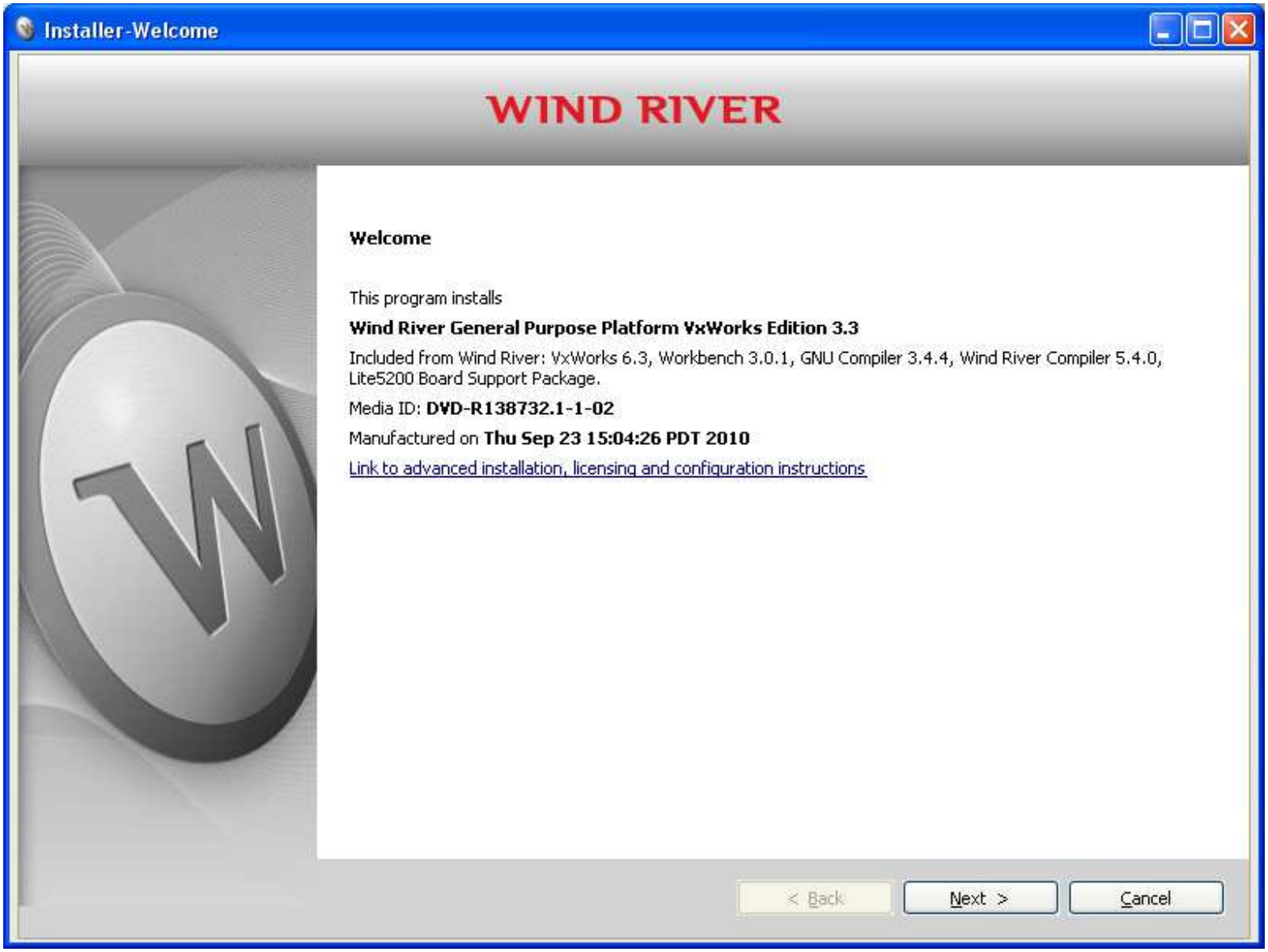
Before You Begin

Before installing, you must exit any Wind River programs or tools that may be running and stop the Wind River Registry for Workbench. To stop the Wind River Registry for Workbench, find the icon in your task bar, right-click it, and select **Shut down**. If an icon is not present in your task bar, then the Wind River Registry for Workbench may not be running. If you used Wind River Workbench during a session, shut down and restart your host machine to make sure that the Wind River Registry for Workbench is stopped before installing any Wind River software.

NOTE: Software from the 2013 FRC will expire before the 2014 FRC kick-off. You must reinstall to update your licensing.

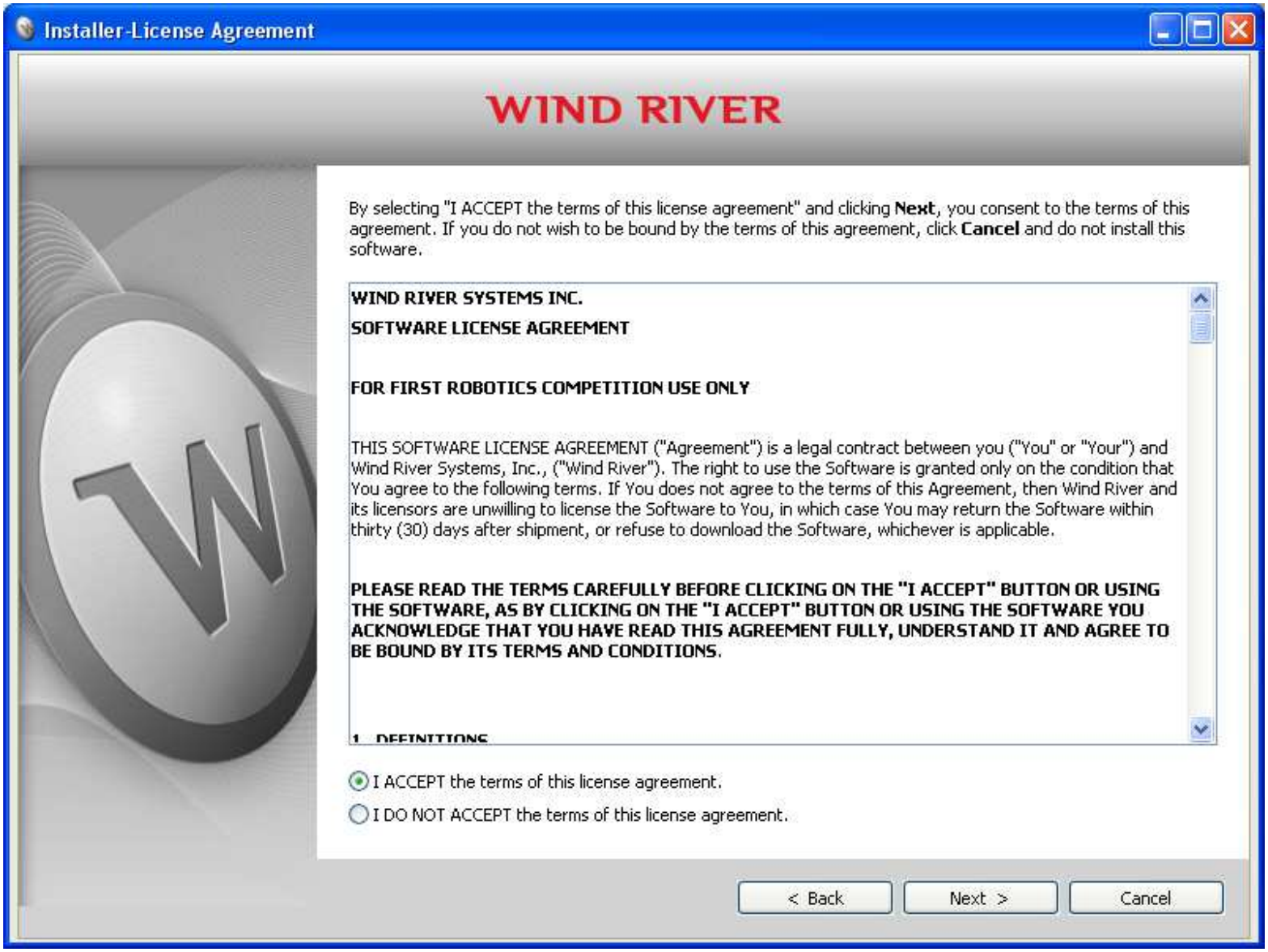
Step 1

Insert the Wind River DVD into the media drive. After a few moments, the **Installer-Welcome** screen will appear. Click **Next**.


Installer-Welcome
WIND RIVER
Welcome
This program installs
Wind River General Purpose Platform VxWorks Edition 3.3
Included from Wind River: VxWorks 6.3, Workbench 3.0.1, GNU Compiler 3.4.4, Wind River Compiler 5.4.0, Lite5200 Board Support Package.
Media ID: DVD-R138732.1-1-02
Manufactured on Thu Sep 23 15:04:26 PDT 2010
Link to advanced installation, licensing and configuration instructions
< Back
Next >
Cancel

Step 2

At the **Installer-License Agreement** screen, select **I ACCEPT** (if you agree to the terms and conditions) and click **Next**.


Installer-License Agreement
WIND RIVER
By selecting "I ACCEPT the terms of this license agreement" and clicking Next, you consent to the terms of this agreement. If you do not wish to be bound by the terms of this agreement, click Cancel and do not install this software.
WIND RIVER SYSTEMS INC.
SOFTWARE LICENSE AGREEMENT
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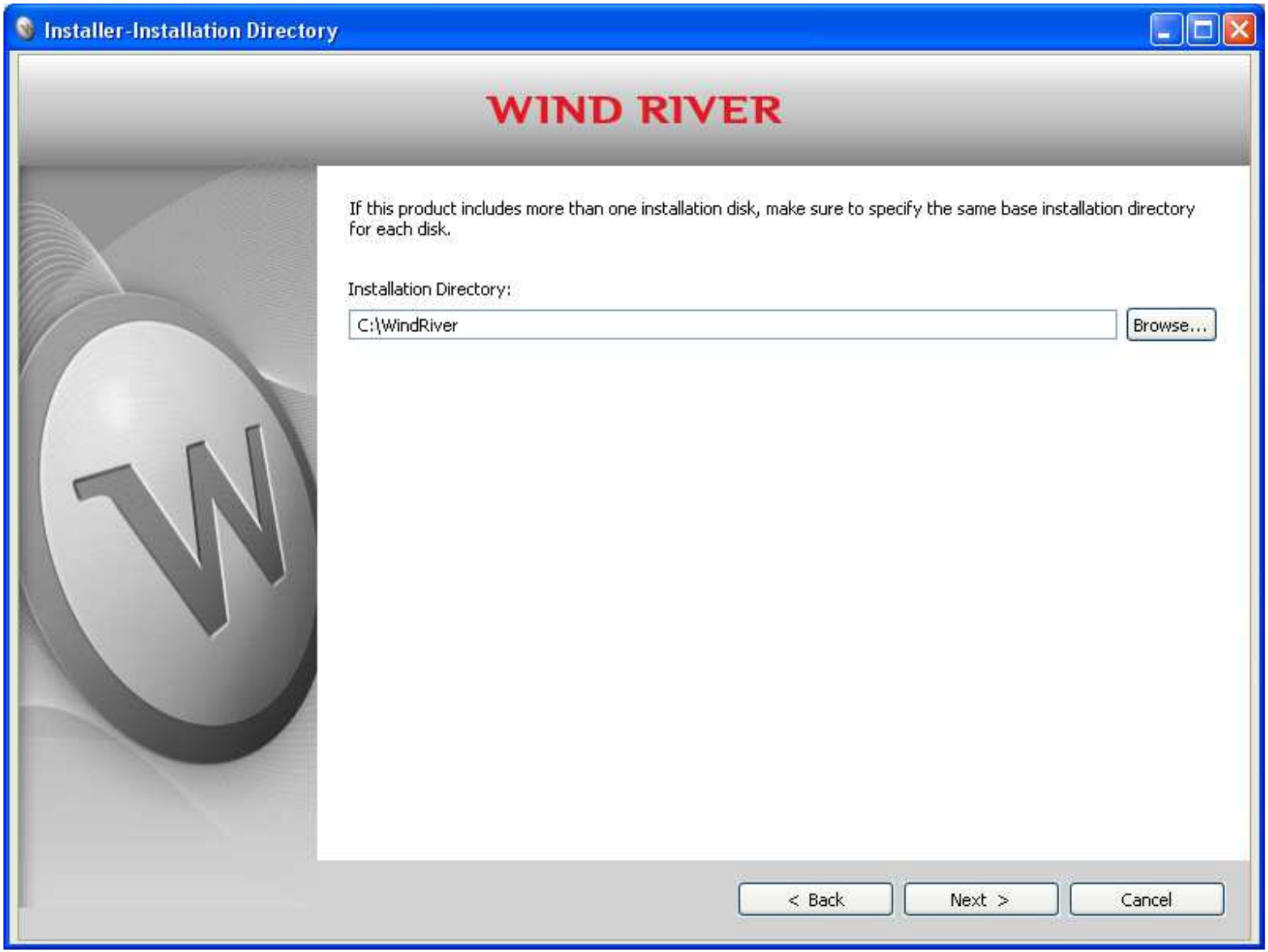
PLEASE READ THE TERMS CAREFULLY BEFORE CLICKING ON THE "I ACCEPT" BUTTON OR USING THE SOFTWARE, AS BY CLICKING ON THE "I ACCEPT" BUTTON OR USING THE SOFTWARE YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT FULLY, UNDERSTAND IT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS.
1. DEFINITIONS
I ACCEPT the terms of this license agreement.
I DO NOT ACCEPT the terms of this license agreement.
< Back
Next >
Cancel

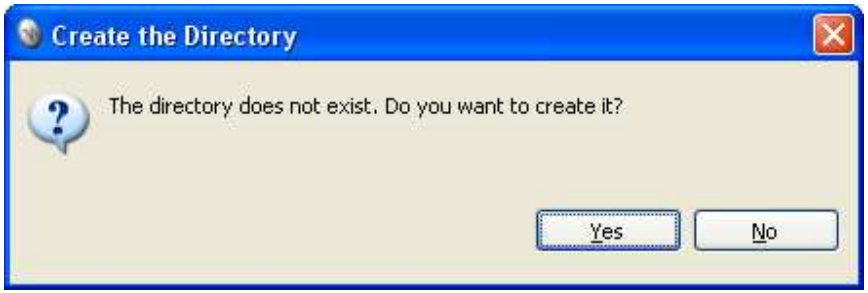
Step 3

At the **Installer-Installation Directory** screen, **we strongly recommend keeping the default** installation directory (*installDir*). All Wind River products should be installed into the same *installDir* (root installation directory.) Click **Next**.


Installer-Installation Directory
WIND RIVER
If this product includes more than one installation disk, make sure to specify the same base installation directory for each disk.
Installation Directory:
C:\WindRiver
Browse...
< Back
Next >
Cancel

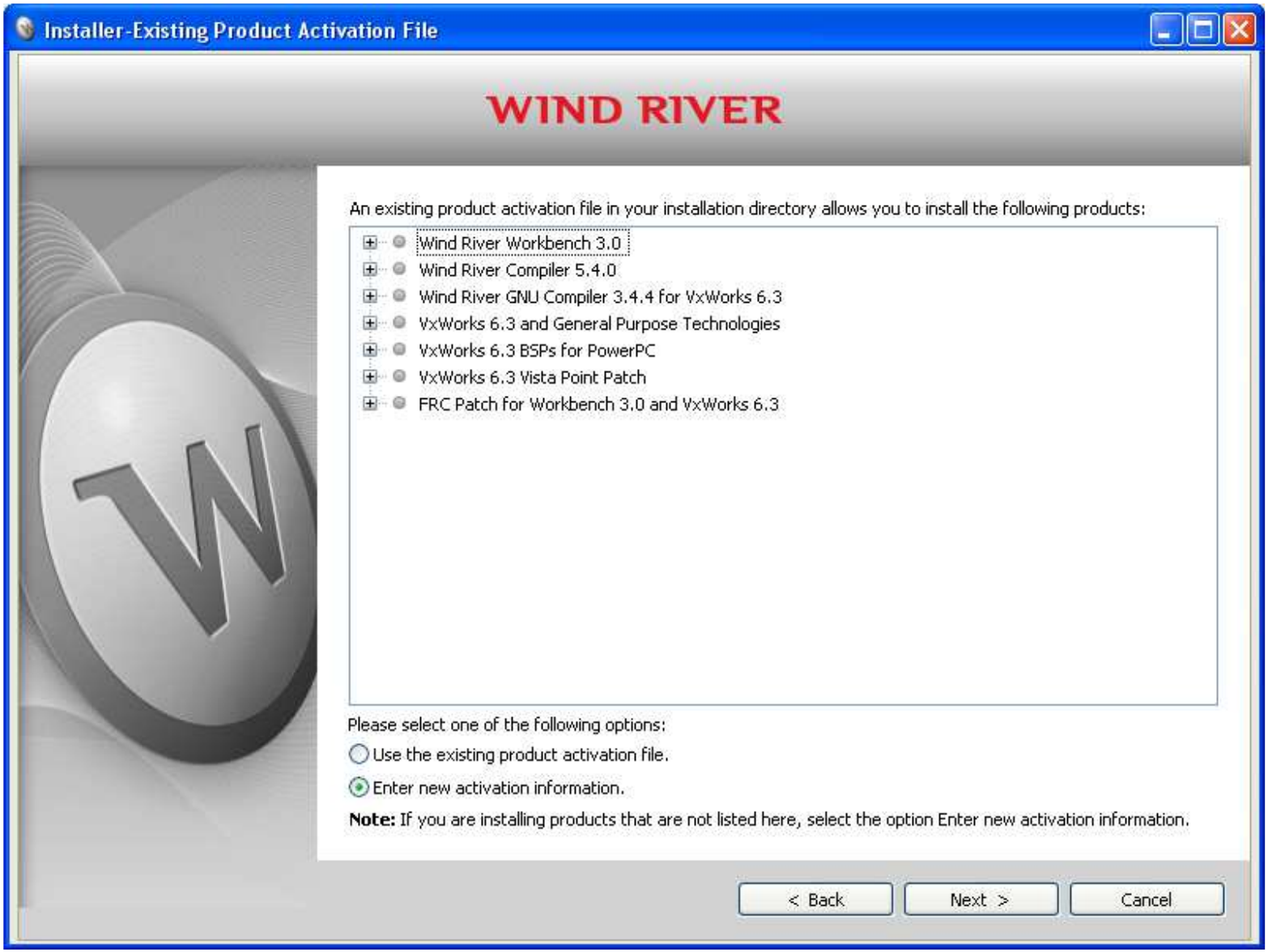
Step 4

If you do not have a previous Wind River installation, you will be asked if you want to create the new directory. Click **Yes**.



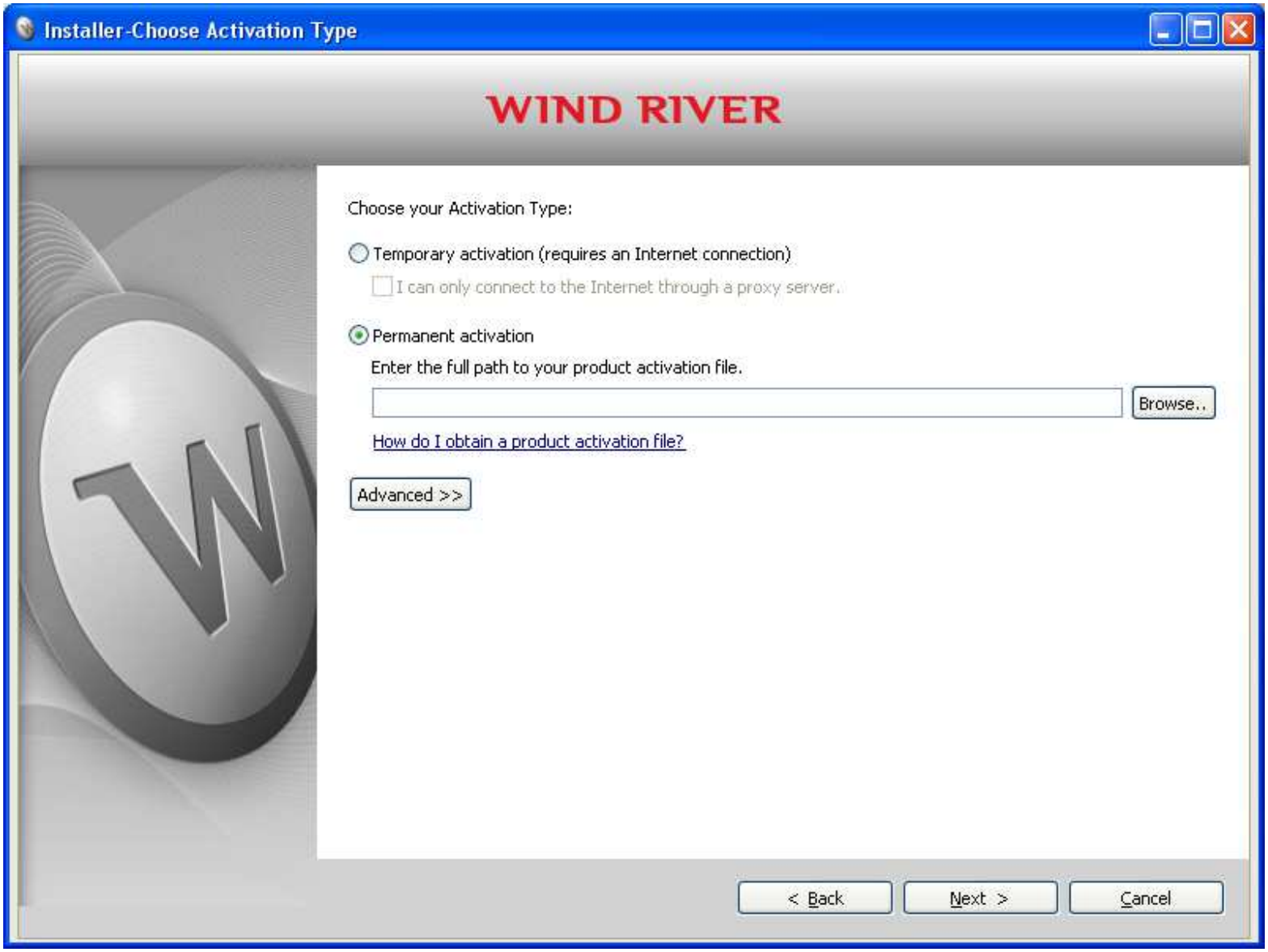
Step 5

If you are reinstalling and have not deleted your previous Wind River software installation, this screen will appear next. Select **Enter new Activation information**, and click **Next**.


Installer-Existing Product Activation File
WIND RIVER
An existing product activation file in your installation directory allows you to install the following products:
Wind River Workbench 3.0
Wind River Compiler 5.4.0
Wind River GNU Compiler 3.4.4 for VxWorks 6.3
VxWorks 6.3 and General Purpose Technologies
VxWorks 6.3 BSPs for PowerPC
VxWorks 6.3 Vista Point Patch
FRC Patch for Workbench 3.0 and VxWorks 6.3
Please select one of the following options:
Use the existing product activation file.
Enter new activation information.
Note: If you are installing products that are not listed here, select the option Enter new activation information.
< Back
Next >
Cancel

Step 6

At the **Installer-Choose Activation Type** screen, select **Permanent activation** and click **Browse**.


Installer-Choose Activation Type
WIND RIVER
Choose your Activation Type:
Temporary activation (requires an Internet connection)
I can only connect to the Internet through a proxy server.
Permanent activation
Enter the full path to your product activation file.
Browse..
How do I obtain a product activation file?
Advanced >>
< Back
Next >
Cancel

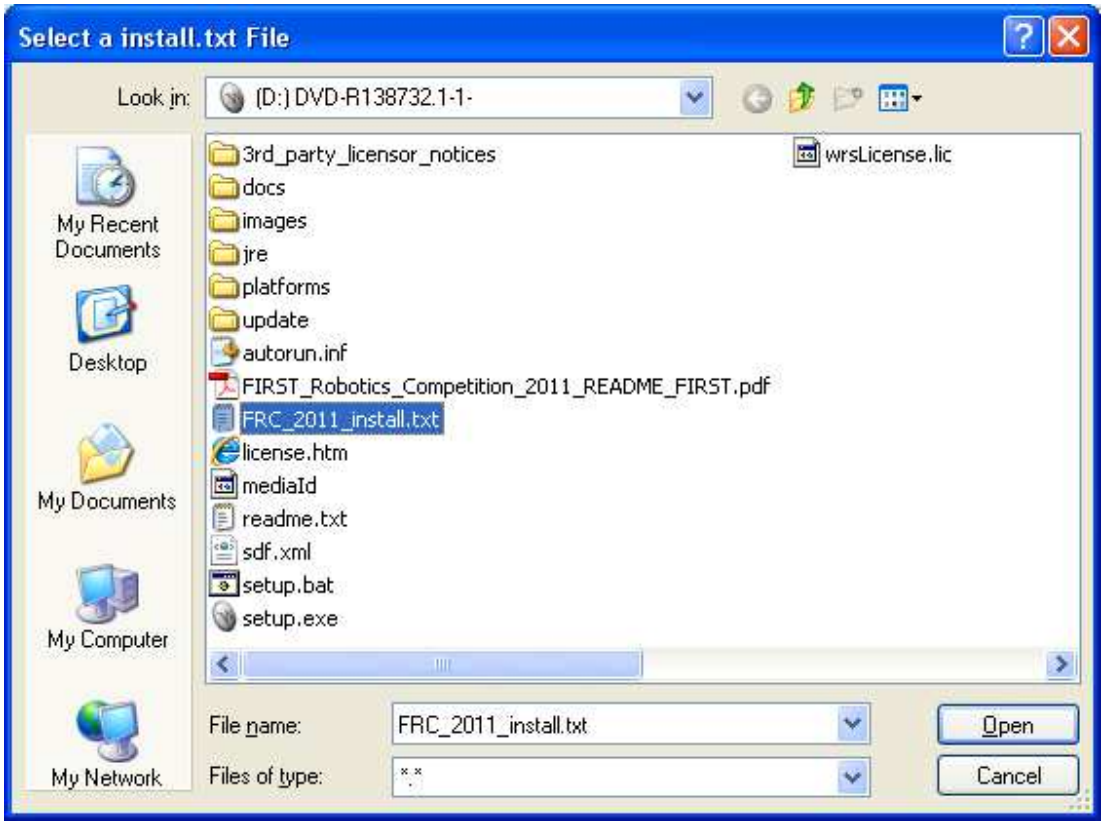
Step 7

Browse to the media directory on your computer, DVD-R138732.1-1.

Select the **FRC_2014_WB30_WB33_install.txt** file.
(The screenshot below shows the 2011 version, but look for the 2014 version, **FRC_2014_WB30_WB33_install.txt**.)

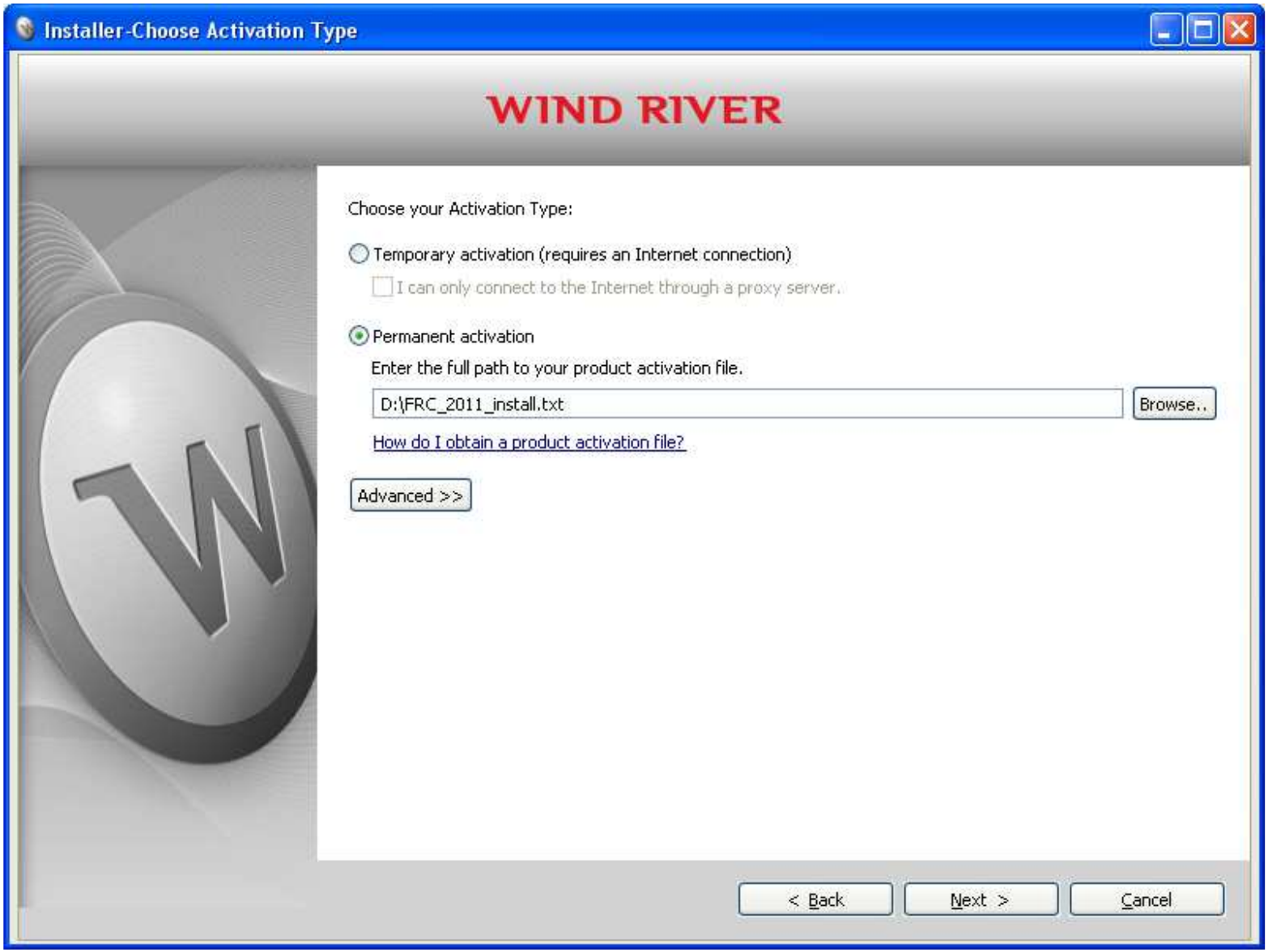
Click **Open**.

Note: No Internet connectivity is required for this activation process. The **FRC_2014_WB30_WB33_install.txt** file contains all the installation keys and licensing needed to install and activate Wind River software.



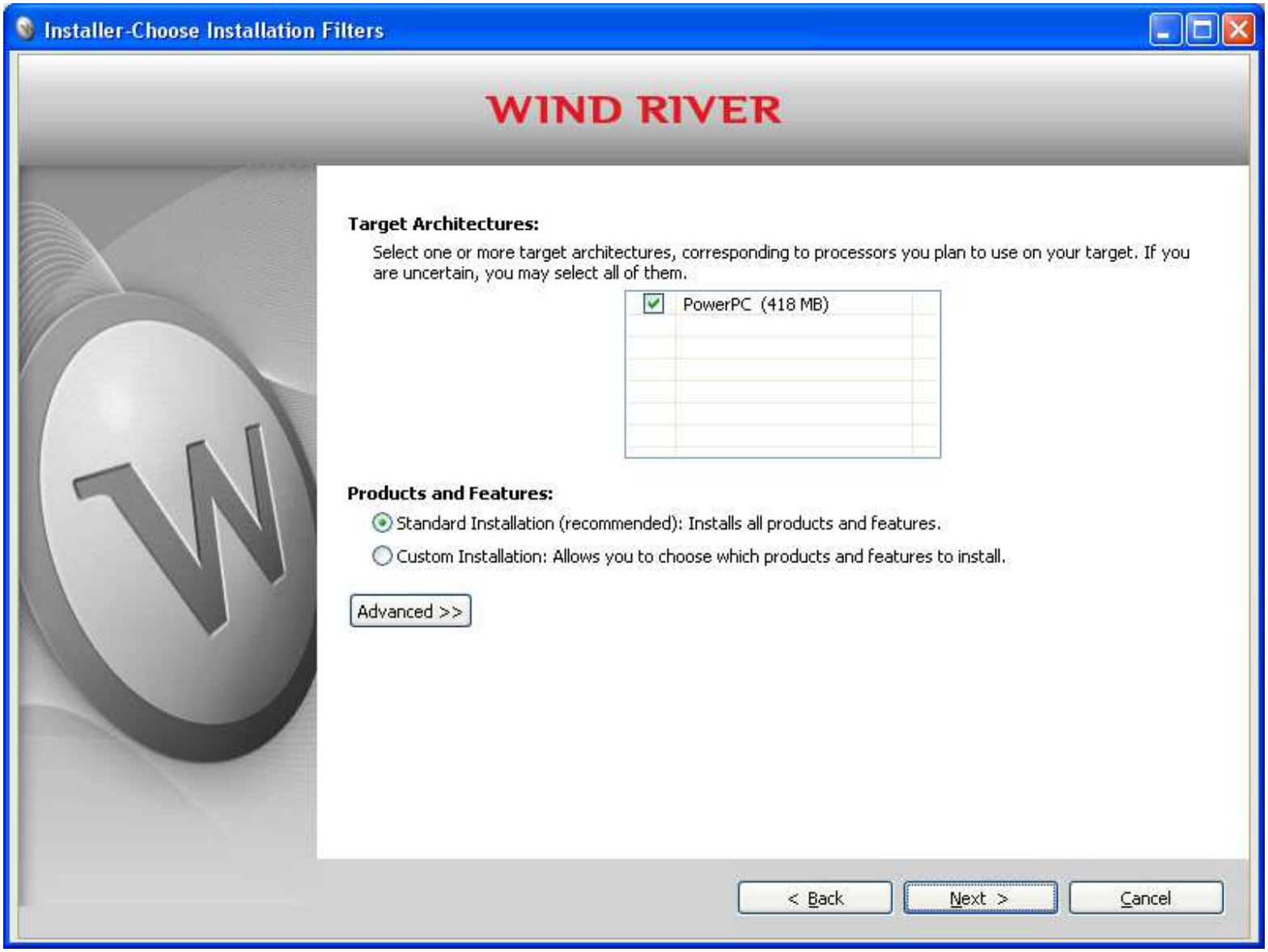
Step 8

Once the path to the file **FRC_2014_WB30_WB33_install.txt** (the product activation file) is displayed under **Permanent activation**, click **Next**. (The screenshot shows 2011, but use the 2014 version, **FRC_2014_WB30_WB33_install.txt**.)


Installer-Choose Activation Type
WIND RIVER
Choose your Activation Type:
Temporary activation (requires an Internet connection)
I can only connect to the Internet through a proxy server.
Permanent activation
Enter the full path to your product activation file.
D:\FRC_2011_install.txt
Browse..
How do I obtain a product activation file?
Advanced >>
< Back
Next >
Cancel

Step 9

If you are installing for the first time, at the **Installer-Choose Installation Filters** screen, make no changes. Click **Next**.


Installer-Choose Installation Filters
WIND RIVER
Target Architectures:
Select one or more target architectures, corresponding to processors you plan to use on your target. If you are uncertain, you may select all of them.
PowerPC (418 MB)
Products and Features:
Standard Installation (recommended): Installs all products and features.
Custom Installation: Allows you to choose which products and features to install.
Advanced >>
< Back
Next >
Cancel

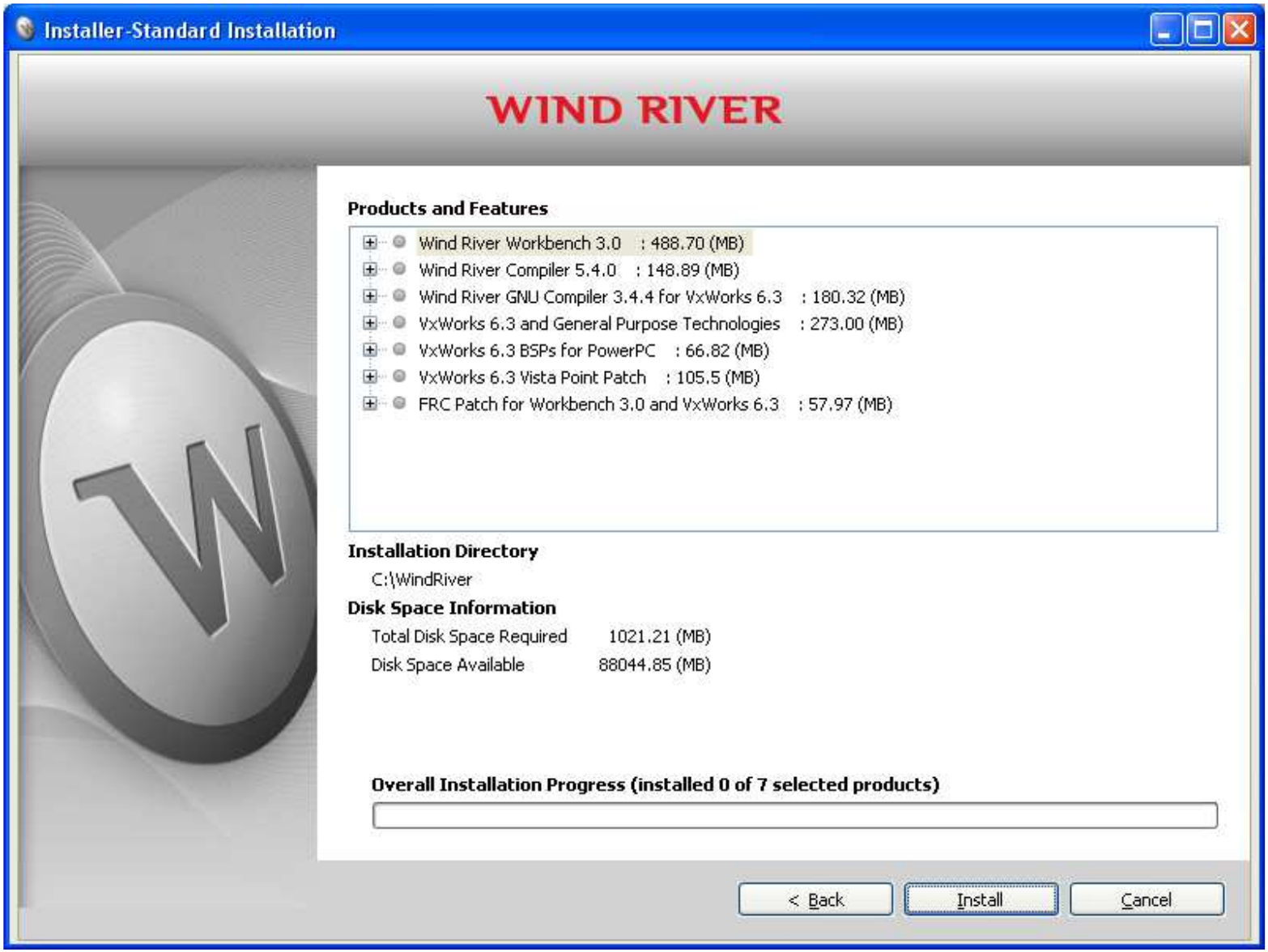
Step 10

If you are reinstalling into a directory with an existing Wind River software installation, this screen appears next. Click **Back** and select **Custom installation**. If you are performing a new installation, you will not see this screen.

Installer-Standard Installation
WIND RIVER
All the entitled products are already installed at: C:\WindRiver
To reinstall any product, please go back and choose Custom option.
< Back
Install
Cancel

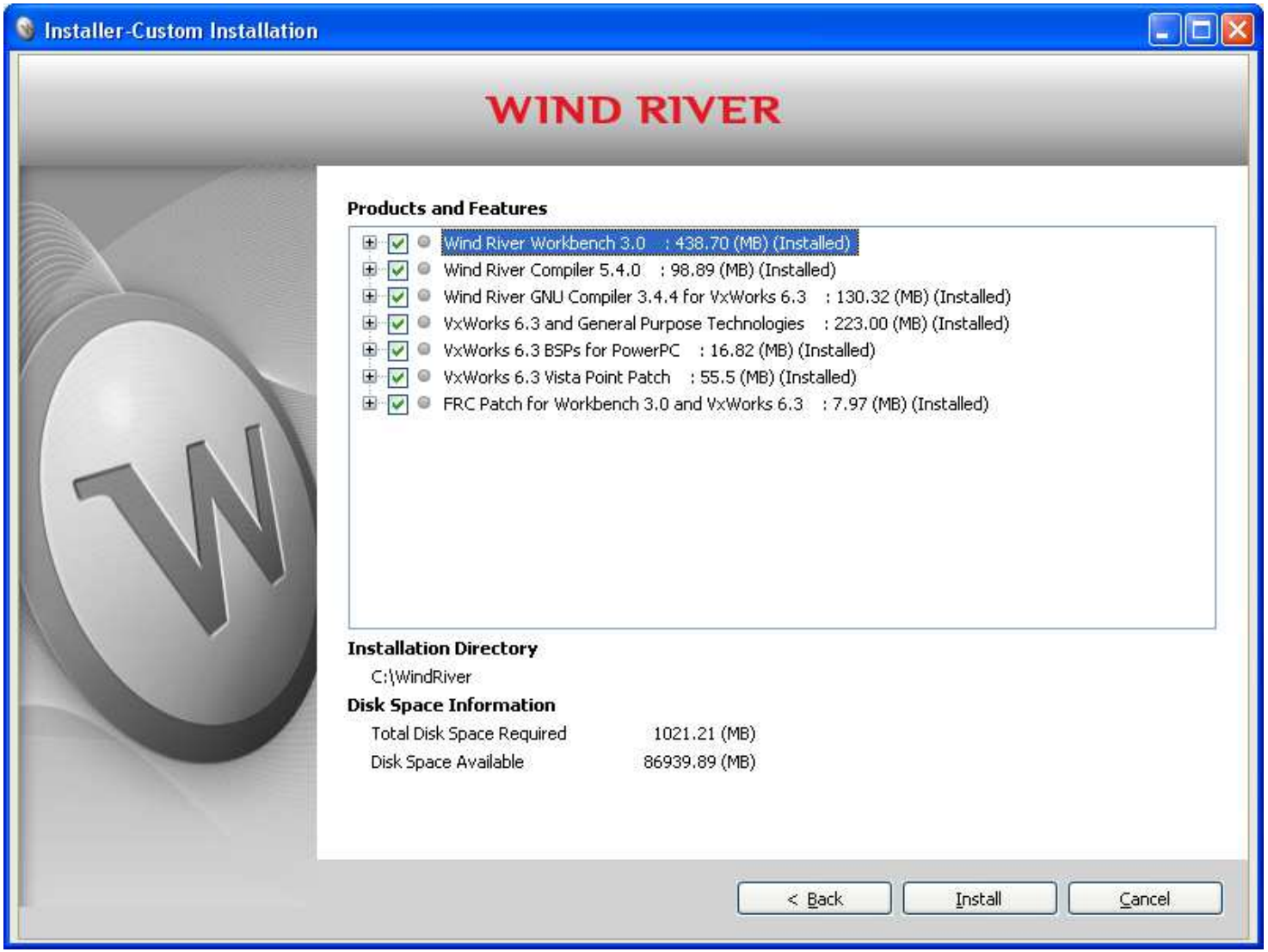
Step 11

If you are installing for the first time, make no changes at the **Installer-Standard Installation** screen and click **Install**. After a few minutes, the installation process begins, showing a green status bar in the **Overall Installation Progress** area.


Installer-Standard Installation
WIND RIVER
Products and Features
Wind River Workbench 3.0 : 488.70 (MB)
Wind River Compiler 5.4.0 : 148.89 (MB)
Wind River GNU Compiler 3.4.4 for VxWorks 6.3 : 180.32 (MB)
VxWorks 6.3 and General Purpose Technologies : 273.00 (MB)
VxWorks 6.3 BSPs for PowerPC : 66.82 (MB)
VxWorks 6.3 Vista Point Patch : 105.5 (MB)
FRC Patch for Workbench 3.0 and VxWorks 6.3 : 57.97 (MB)
Installation Directory
C:\WindRiver
Disk Space Information
Total Disk Space Required 1021.21 (MB)
Disk Space Available 88044.85 (MB)
Overall Installation Progress (installed 0 of 7 selected products)
< Back
Install
Cancel

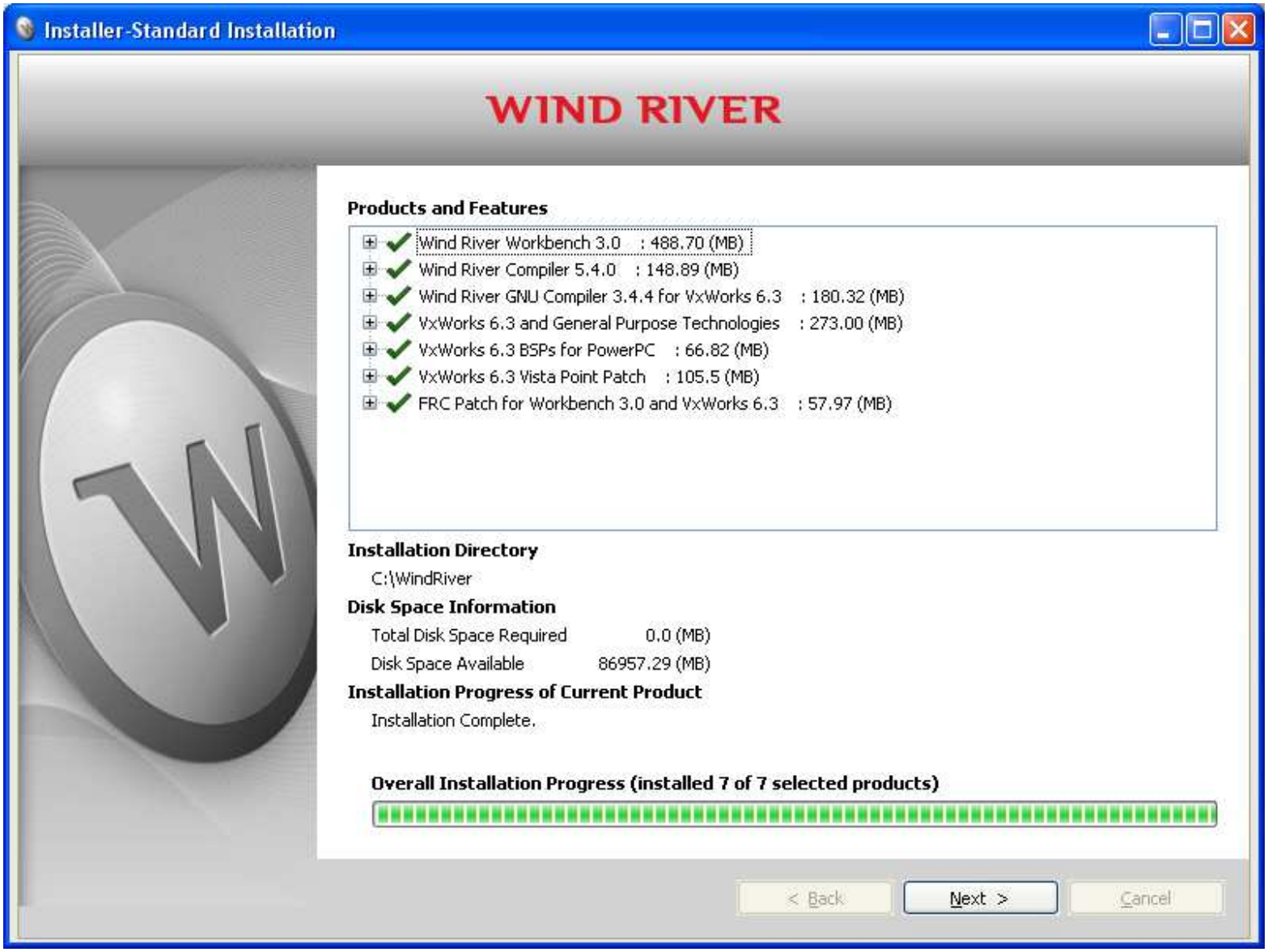
Step 12

If you are reinstalling, you must manually select every box on this screen. In order to install all products, a check mark must appear in each box. Click **Install**. The installation process will begin in a moment, showing a green status bar in the **Overall Installation Progress** area.


Installer-Custom Installation
WIND RIVER
Products and Features
Wind River Workbench 3.0 : 438.70 (MB) (Installed)
Wind River Compiler 5.4.0 : 98.89 (MB) (Installed)
Wind River GNU Compiler 3.4.4 for VxWorks 6.3 : 130.32 (MB) (Installed)
VxWorks 6.3 and General Purpose Technologies : 223.00 (MB) (Installed)
VxWorks 6.3 BSPs for PowerPC : 16.82 (MB) (Installed)
VxWorks 6.3 Vista Point Patch : 55.5 (MB) (Installed)
FRC Patch for Workbench 3.0 and VxWorks 6.3 : 7.97 (MB) (Installed)
Installation Directory
C:\WindRiver
Disk Space Information
Total Disk Space Required 1021.21 (MB)
Disk Space Available 86939.89 (MB)
< Back
Install
Cancel

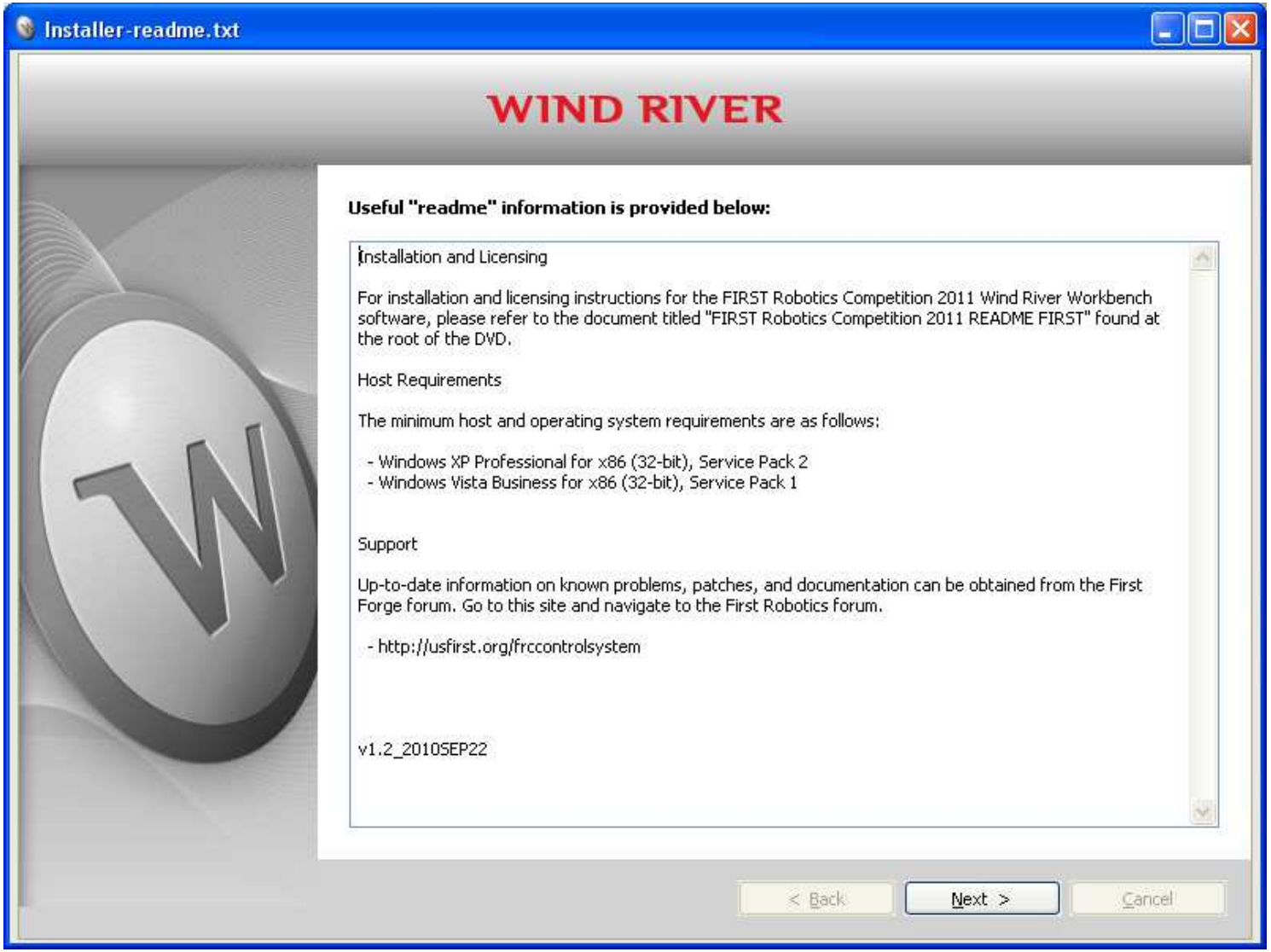
Step 13

When the **Overall Installation Progress** shows **(installed 7 of 7 selected products)**, click **Next**.


Installer-Standard Installation
WIND RIVER
Products and Features
Wind River Workbench 3.0 : 488.70 (MB)
Wind River Compiler 5.4.0 : 148.89 (MB)
Wind River GNU Compiler 3.4.4 for VxWorks 6.3 : 180.32 (MB)
VxWorks 6.3 and General Purpose Technologies : 273.00 (MB)
VxWorks 6.3 BSPs for PowerPC : 66.82 (MB)
VxWorks 6.3 Vista Point Patch : 105.5 (MB)
FRC Patch for Workbench 3.0 and VxWorks 6.3 : 57.97 (MB)
Installation Directory
C:\WindRiver
Disk Space Information
Total Disk Space Required 0.0 (MB)
Disk Space Available 86957.29 (MB)
Installation Progress of Current Product
Installation Complete.
Overall Installation Progress (installed 7 of 7 selected products)
< Back
Next >
Cancel

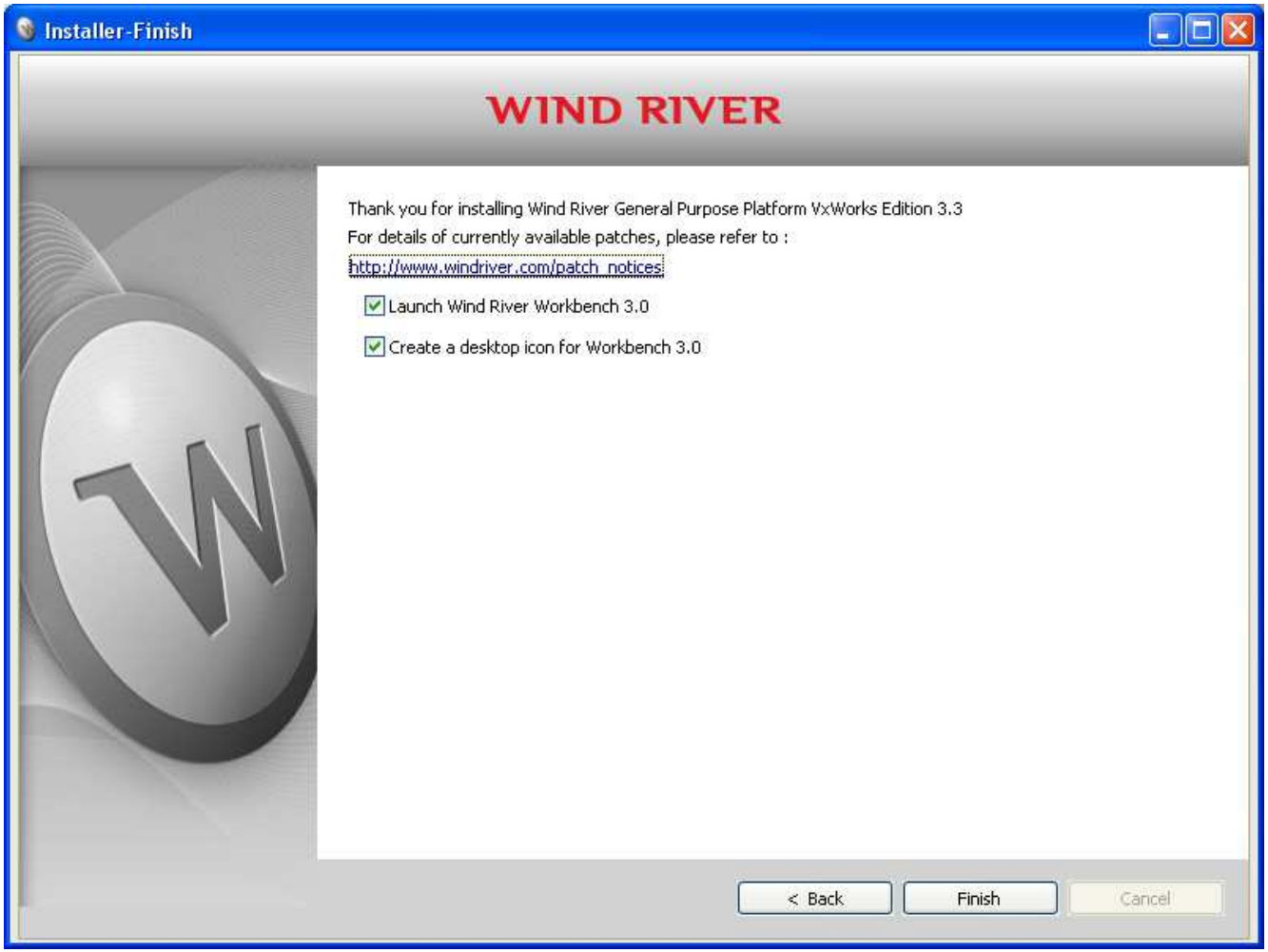
Step 14

Read the information shown on the **Installer-readme.txt** screen. This readme is installed as **FRC_readme.txt** in your *installDir*. Click **Next**. Note: The screenshot below shows the readme from 2011. See the **installed FRC_readme.txt** for the latest information.


Installer-readme.txt
WIND RIVER
Useful "readme" information is provided below:
Installation and Licensing
For installation and licensing instructions for the FIRST Robotics Competition 2011 Wind River Workbench software, please refer to the document titled "FIRST Robotics Competition 2011 README FIRST" found at the root of the DVD.
Host Requirements
The minimum host and operating system requirements are as follows:
- Windows XP Professional for x86 (32-bit), Service Pack 2
- Windows Vista Business for x86 (32-bit), Service Pack 1
Support
Up-to-date information on known problems, patches, and documentation can be obtained from the First Forge forum. Go to this site and navigate to the First Robotics forum.
- http://usfirst.org/frccontrolsystem
v1.2_2010SEP22
< Back
Next >
Cancel

Step 15

- If you are using a Windows 8, Windows 7 or Windows XP 64-bit host, you must install Disc 2. Therefore, on this screen, uncheck both boxes so that Workbench 3.0 will not launch automatically. Click **Finish** and install Disc 2.
- If you are using a different host type and do not need to install Disc 2, leave these boxes checked. Click **Finish**.


Installer-Finish
WIND RIVER
Thank you for installing Wind River General Purpose Platform VxWorks Edition 3.3
For details of currently available patches, please refer to :
http://www.windriver.com/patch_notices
Launch Wind River Workbench 3.0
Create a desktop icon for Workbench 3.0
< Back
Finish
Cancel

NOTE: The product activation file, **FRC_2014_WB30_WB33_install.txt**, is renamed as **install.txt** when put into your *installDir*. To start Wind River Workbench manually, see the instructions in the **readme-workbench.txt** file located in your *installDir*.

Chapter 3: Installing Wind River Workbench 3.3.1

3.1 Installation

Who Needs to Install Disc 2?

Disc 1 must be installed first. If your host operating system is Windows **8**, Windows **7** or Windows **XP 64-bit**, you must also install Disc 2.

CAUTION: **Do not launch Wind River Workbench 3.0 before installing Wind River Workbench 3.3 from Disc 2.** If you do, you will see an error message when you start Wind River Workbench 3.3.

If you need to install Disc 2, on the final screen of the installer for Disc 1, be sure to uncheck both boxes so that Wind River Workbench 3.0 will not launch automatically. Then, click **Finish** and install Disc 2.

Installing Disc 2

DVD-R171811.1-1-02
Wind River Workbench 3.3.1
FIRST Robotics Competition 2014 - Disc 2

This DVD has an updated Wind River installer, but the installation process is essentially the same, with the following important exceptions:

1. When prompted for an installation directory, be sure to **enter the existing directory name you used for Disc 1**. The installer does not automatically detect the *installDir* of your existing installation.

2. On the **Installer Updates** screen, **uncheck** the box for **Check for and apply latest updates for this installer**.

3. On the **Choose Activation Type** screen, you will see an option called **Use your existing product activation (install.txt) file**. Leave this option selected and click **Next**.

   Because you already selected **FRC_2014_WB30_WB33_install.txt** when you installed Disc 1, the installer automatically detects this file. This same **FRC_2014_WB30_WB33_install.txt** file is used to install Wind River Workbench 3.3.1 from Disc 2.

4. At every screen, click **Next**. There is no need to change any of the selections.

3.2 Using Wind River Workbench 3.3.1 with VxWorks 6.3

Once you have completed the installation process, you may see two Wind River Workbench icons on your desktop. Be sure to select the icon for Wind River Workbench 3.3. **Do not launch Wind River Workbench 3.0**. For Windows **8**, Windows **7** and Windows **XP 64-bit** host operating systems, you must use Wind River Workbench 3.3.

Recovering from a Workbench 3.0 Launch

If you do start Wind River Workbench 3.0, follow these steps to use Wind River Workbench 3.3:

1. Exit Wind River Workbench 3.0.
2. Shut down the Wind River Registry for Workbench:
   - To stop the Wind River Registry for Workbench, find the icon in your task bar, right-click it, and select **Shut down**.
   - If an icon is not present in your task bar, the Wind River Registry for Workbench may not be running.
   - If you used Wind River Workbench during a session but you cannot find the icon, shut down and restart your host computer to make sure the Wind River Registry for Workbench is stopped.
3. Start Wind River Workbench 3.3.
4. To restore the documents window in Workbench, select **Help > Getting Started**.

Choosing a Workspace Name

When you launch Workbench 3.3, designate a new workspace name, or use a Workbench 3.3 workspace name that worked previously.

Important: When you launch Workbench 3.3, it will not detect your *installDir* in the workspace path. Note that if you kept the default installation directory, **C:\WindRiver**, no change is needed. Therefore, we strongly recommend keeping the default directory when doing your installation.

Always check the workspace directory path and make sure the root path is the same as your base installation directory (*installDir*). For example, if your *installDir* is **C:\WindRiver_FRC2014**, a sample workspace path is **C:\WindRiver_FRC2014\workspace_robot8**.

Wind River Documentation

After starting Workbench, you can navigate through the Wind River Workbench environment to find Wind River documentation. The easiest way to find documents in Wind River Workbench is to select the **Help > Help Contents** menu item. This starts the help system in a browser, and provides search capability across all installed documents. We recommend doing the tutorial in the *Wind River Workbench Users Guide*.

Chapter 4: Mandatory Software Updates from FIRST

As a reminder, after completing the software installation instructions contained in this document, all teams must fetch and install mandatory software updates from the FIRST Web site.

Up-to-date information on known problems, patches, and documentation are also available from the FIRST Web site:

http://www.usfirst.org/roboticsprograms/frc

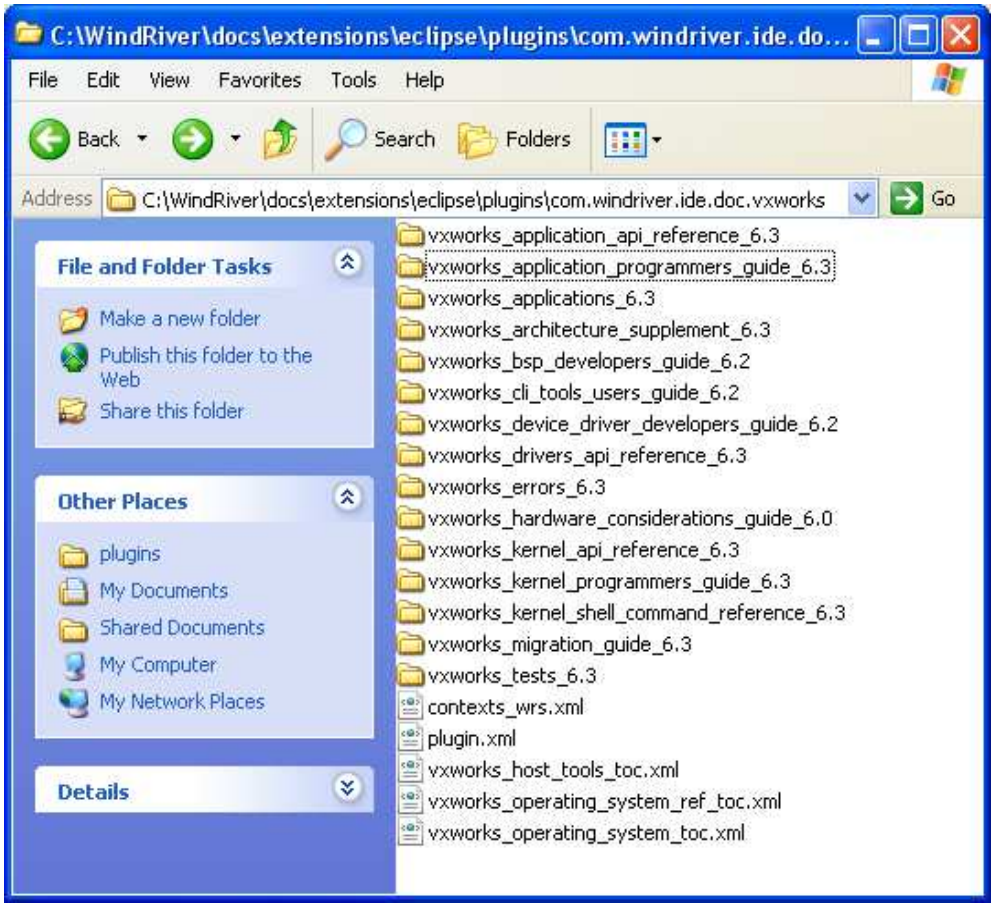
Chapter 5: Wind River Documentation Notes for FIRST Robotics Competition 2014

The *Wind River VxWorks Platforms Getting Started Guide* is located at the root of Disc 2.

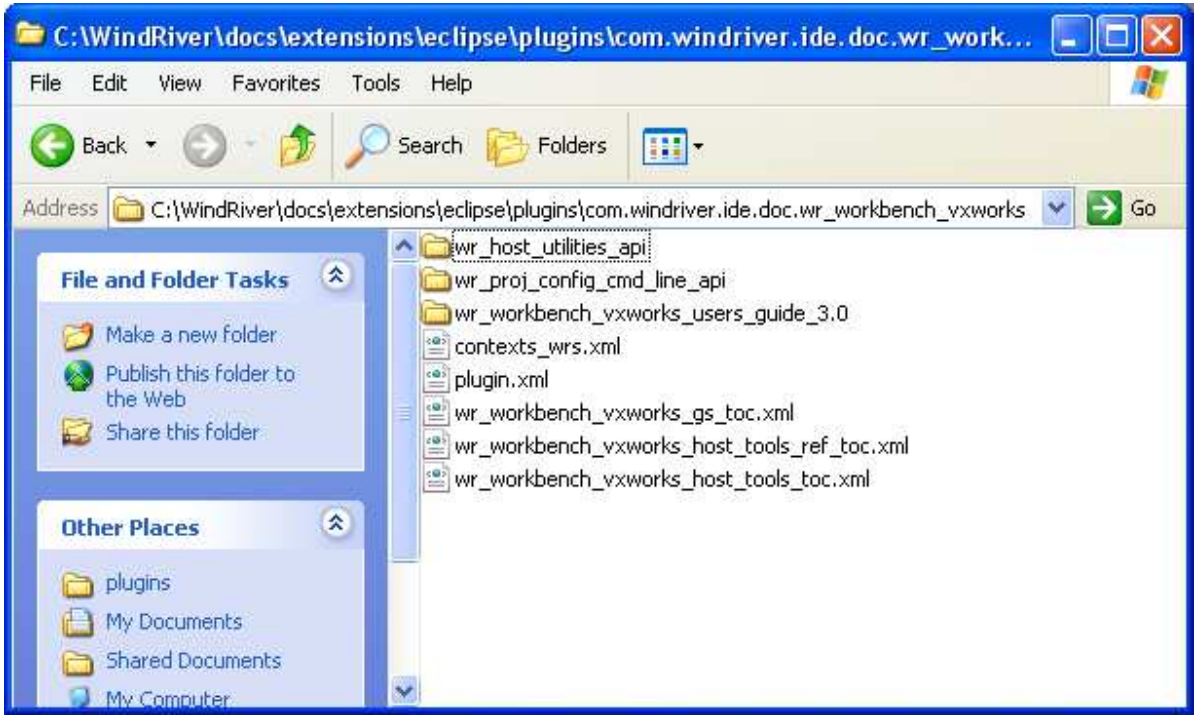
Additional documentation can be found at **C:\WindRiver\docs\extensions\eclipse\plugins**.

For VxWorks specifically, see **C:\WindRiver\docs\extensions\eclipse\plugins\com.windriver.ide.doc.vxworks**.

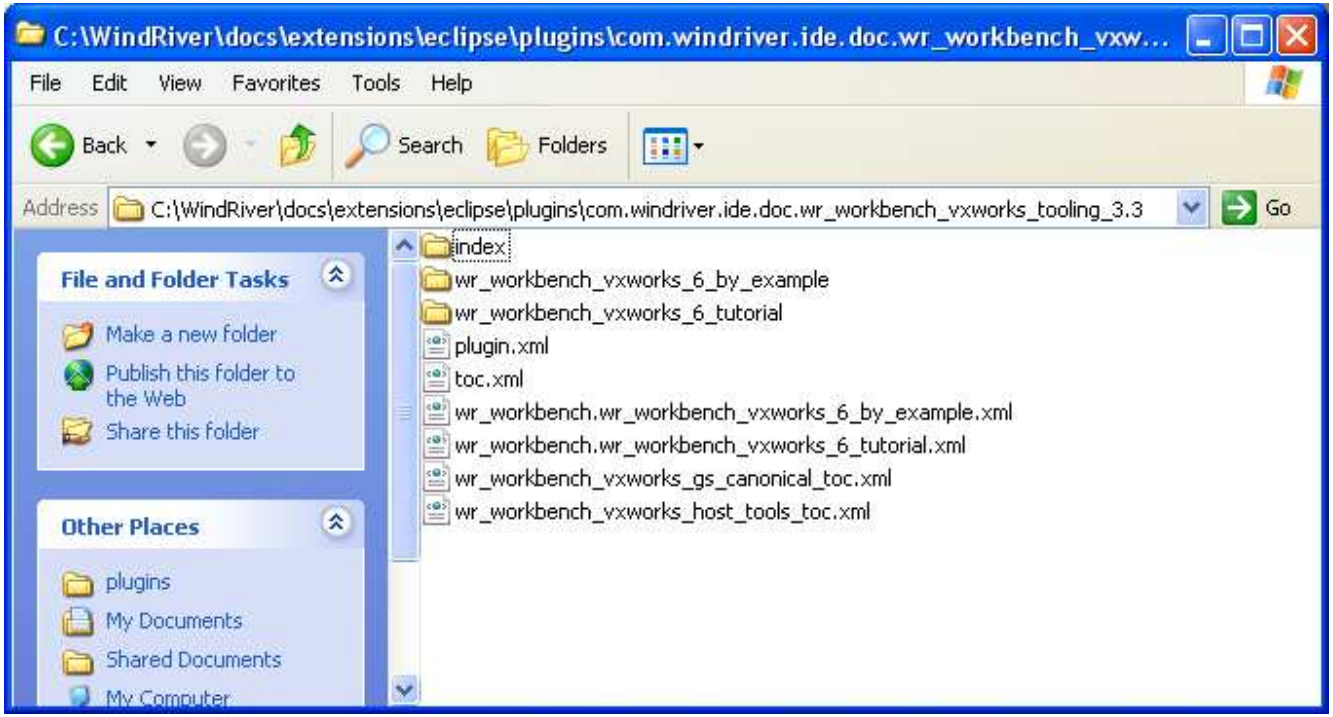
For example, a PDF is located in the **C:\WindRiver\docs\extensions\eclipse\plugins\com.windriver.ide.doc.vxworks\vxworks_application_programmers_guide_6.3** directory.



Documentation on using Workbench with VxWorks can be found at **C:\WindRiver\docs\extensions\eclipse\plugins\com.windriver.ide.doc.wr_workbench_vxworks**.



Tutorials and examples are at
C:\WindRiver\docs\extensions\eclipse\plugins\com.windriver.ide.doc.wr_workbench_vxworks_tooling_3.3.



These documents can also be accessed from the **Start** menu.